

THE CLAIMS

What is Claimed is:

- 5 1. A surface expression vector comprising at least one gene selected from the group consisting of pgsB, pgsC and pgsA genes encoding a poly-gamma-glutamate synthetase complex, and a gene encoding a parvovirus capsid antigen protein selected from the group consisting of VP2-1, VP2-2 and VP2.
- 10 2. The expression vector according to claim 1, wherein the vector is pHCE2LB:pgsA:CVP2-1, pHCE2LB:pgsA:VP2-2 or pHCE2LB:pgsA:VP2.
3. A microorganism transformed with the expression vector of claim 1 or 2.
- 15 4. The transformed microorganism according to claim 3, wherein the microorganism is selected from the group consisting of *E. coli.*, *Salmonella typhi*, *Salmonella Typhimurium*, *Vibrio cholerae*, *Mycobacterium bovis*, *shigella*, *Bacillus*, lactic acid bacteria, *Staphylococcus*, *Listeria monocytogenes* and *Streptococcus*.
- 20 5. The transformed microorganism according to claim 4, wherein the microorganism is lactic acid bacteria.
6. A method for preparing a parvovirus capsid antigen protein, wherein the
25 method comprises the steps of culturing the transformed microorganisms of claim 3, and then expressing the parvovirus capsid antigen protein on the surface of the microorganisms.
7. A vaccine for the prevention of parvovirus, containing the capsid antigen
30 protein prepared by the method of claim 6 as an effective ingredient.

8. The vaccine according to claim 7, wherein the antigen protein is an expressed form on the surface of the microorganism, a crudely extracted form, or a purified form.
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9. The vaccine according to claim 7, wherein the vaccine is administered orally or ingested as food.
10. The vaccine according to claim 7, wherein the vaccine is for hypodermic or
- 10 celiac injection.
11. The vaccine according to claim 7, wherein the vaccine is for rhinal administration.
- 15 12. The vaccine according to claim 7, wherein the vaccine is used for the prevention of canine parvovirus infection and feline panleukopenia.
13. A method for preparing a parvovirus capsid antigen protein, wherein the method comprises the steps of culturing the transformed lactic acid bacteria of
- 20 claim 5, and then expressing the parvovirus capsid antigen protein on the surface of the lactic acid bacteria.
14. A lactic acid bacteria produced by the method of claim 13, comprising a parvovirus capsid antigen protein expressed on their surface.
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15. A vaccine for the prevention of parvovirus, containing the lactic acid bacteria of claim 14, a capsid antigen protein extracted from the lactic acid bacteria, or a capsid antigen protein purified from the lactic acid bacteria, as an effective ingredient.
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16. The vaccine according to claim 15, wherein the vaccine is administered orally or ingested as food.
17. The vaccine according to claim 15, wherein the vaccine is for the prevention
5 of canine parvovirus infection and feline panleukopenia.
18. A feedstuff additive for the prevention of parvovirus containing the microorganism of claim 3 or a parvovirus capsid antigen protein obtained by culturing the microorganisms, as an effective ingredient.
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19. A feedstuff additive for the prevention of parvovirus containing the lactic acid bacteria of claim 14 or a parvovirus capsid antigen protein obtained by culturing the lactic acid bacteria, as an effective ingredient.
- 15 20. A preparation for the prevention of parvovirus containing the microorganism of claim 3 or a parvovirus capsid antigen protein obtained by culturing the microorganisms, as an effective ingredient.